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N58Y N589 N59Y N593 N599 N60X N648 N653  
N658 N66Y N661 N670 N671 N672 N69X N764  
N784  
A5R RPC  
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(58) Field of search

UK CL (Edition K) A5R RPC, B5N, D1K, D1R RBB  
RBZ RGP  
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(54) Breathable fabric

(57) A breathable insulating fabric is described, from which wearable articles such as garments or medical support fabrics or dressings can be made, in which an elastomeric insulating sheet (1) has perforations (4) which have relatively wide (5) and narrow regions (6), (10) along their lengths to define an internal chamber 7 open to the inner side of the sheet as worn and sufficiently closed to the outer side of the sheet to permit air passing from the inner to the outer side of the sheet to accumulate in the chamber under increased pressure prior to passing to the outer side. The breathability of the fabric is adaptable to changes in the external conditions and the biological functions of the wearer.

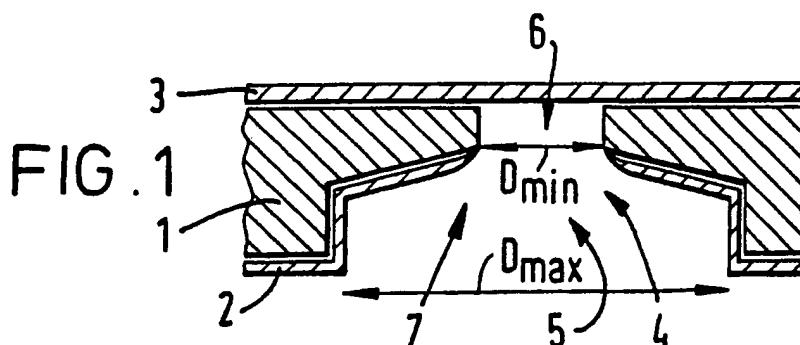
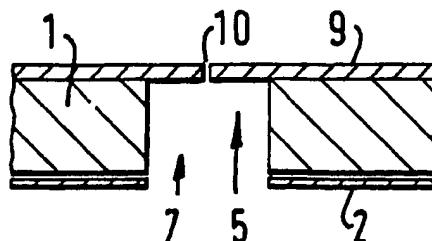


FIG. 3a



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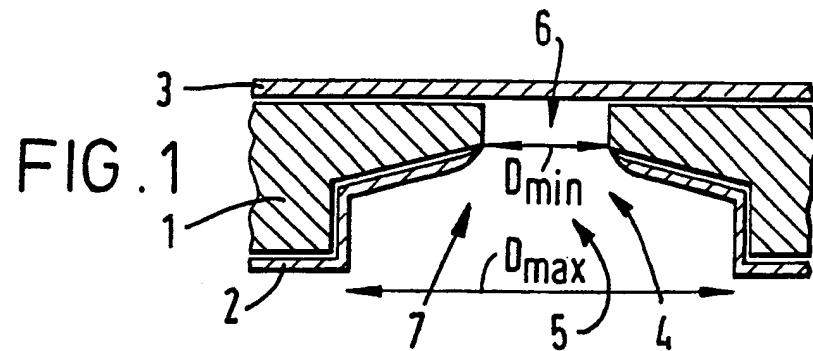


FIG. 1

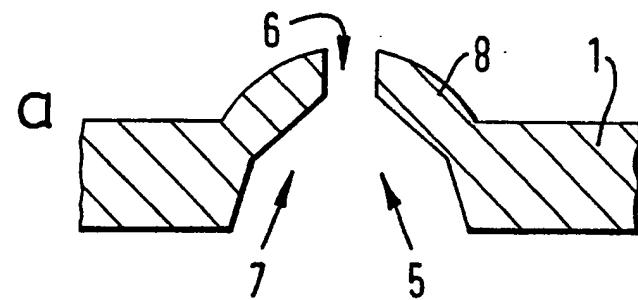


FIG. 2

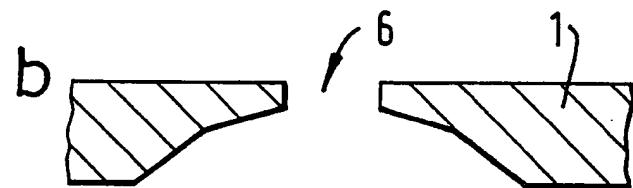
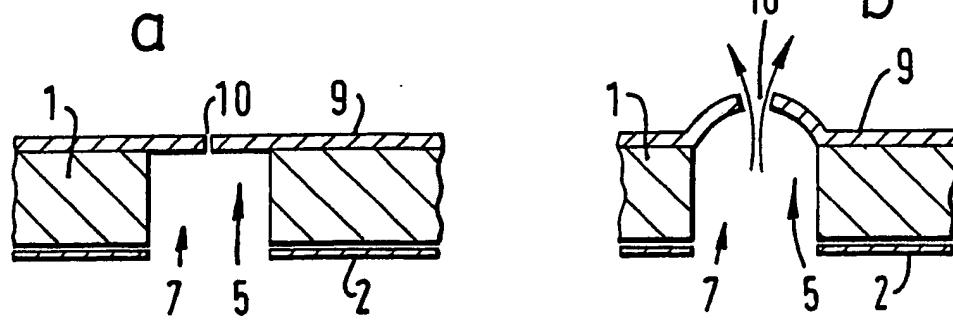


FIG. 3



a

b

-1-

FABRIC

The present invention relates to a novel fabric.

Insulating fabrics are known which comprise an impermeable, thermally efficient sheet material such as  
5 neoprene rubber. Such fabrics are, however, not wearable next to the user's skin for extended periods of time, mainly due to the interference they can cause to the natural biological functions of the skin, in particular perfusion of the skin with oxygen and  
10 removal of natural excretions such as water vapour, salt, urea and carbon dioxide.

Previous efforts to improve the wearability of impermeable materials have included perforation of the material and lamination with a more skin-compatible  
15 material such as woven cotton.

British Patent No. 1267712, for example, describes (Fig. 4) a breathable fabric in which a perforated elastomeric sheet is bonded between stretch-fabric sheets. The diameter of the perforations reduces  
20 slightly towards the outside of the finished garment to facilitate manufacture.

Such fabrics are reasonably wearable given normal external conditions and the biological functions of the wearer. However, if for example the wearer sweats or  
25 warms up during exercise or under stress, or the external temperature or humidity rises or falls, or the fabric becomes soaked with water, or in other abnormal situations, the breathable efficiency of the fabric declines rapidly, which can make the garment extremely  
30 uncomfortable or even dangerous to wear. Such poor adaptability has limited the use of breathable

- elastomeric fabrics, for example for insulating and/or protective garments, for medical or veterinary garments and/or dressings (where the patient's skin may be injured or prolonged close contact with the skin may be required), or for exercise and sports garments where rapid changes of perspiration and other skin functions take place. The present invention aims to provide a breathable fabric which goes at least some way towards overcoming the above disadvantages.
- 10 According to the present invention, there is provided a fabric comprising a sheet formed of a substantially impermeable material having perforations provided therethrough, each perforation having at least one relatively wide region and at least one relatively narrow region along its length to define an internal chamber open to a first ("inner") side of the sheet and sufficiently closed to the other ("outer") side of the sheet to permit air passing from the first to the other side of the sheet to accumulate in the chamber under increased pressure prior to passing out to the other side of the sheet.

The expressions "relatively wide" and "relatively narrow" mean that the respective regions are wide and narrow relative to each other. The expression "fabric" includes a fabric portion, and the expression "sheet" includes a sheet portion.

The substantially impermeable sheet may be a unitary sheet or a laminate, and is preferably elastomeric (eg. formed from a rubber such as neoprene rubber). In the case of a laminate, different materials may if desired be used for different lamina so as to provide overall a sheet having the desired properties.